

Application No.09/865,871  
Amendment dated October 7 2003  
Reply to Office Action of August 4, 2003

## REMARKS

In view of the preceding amendments and the comments which follow, and pursuant to 37 C.F.R. § 1.111, amendment and reconsideration of the Official Action of July 18, 2003 is respectfully requested by Applicant.

### Summary

Claims 1 – 19 stand rejected. Claims 1 – 3 and 5 – 11 have been amended. Claim 4 has been cancelled. The remaining claims 1 – 3 and 5 – 11 are pending following consideration of the present remarks.

### Rejection under 35 U.S.C. § 112

The Examiner has rejected claims 1 – 19 under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant has amended claims 1 and 11. As such, the limitation “the free magnetic layers” cited in claim 1 has been amended to refer to only one free magnetic layer and thus renders the corresponding claim passage definite. Further, claim 11 has been amended to recites that the first and second free magnetic layers are separated by the second [a] non-magnetic intermediate layer, which does refer to the second intermediate non-magnetic layer introduced and referred to in claim 1.

Thus, Applicants therefore respectfully request that the rejections of claims 1 – 11 under 35 U.S.C. § 112 be withdrawn, as well as the remaining claims 2, 3, and 5 – 19 by virtue of their dependency from now definite claims 1 and 11.

### Rejection under 35 U.S.C. § 102

The Examiner has rejected claims 1 – 3, 5, 9 – 10, and 18 – 19 under 35 U.S.C §102 (e) as being anticipated by Carey et al. (U.S. Patent No. 6,266,218).

The pending claim 1, directed to a spin-valve type thin film element, has been amended to include the features of claim 4. Thus, claim 1 further recites that "wherein the free magnetic layer is divided into two sub-layers separated by the non-magnetic intermediate layer, the sub-layers being in a ferrimagnetic state in which the magnetization direction of one sub-layer is 180 degrees different from the magnetization direction of the other sub-layer."

This added feature relates to an exchange coupling magnetic field generated in the free magnetic layer which is divided into two sub-layers by a nonmagnetic intermediate layer. The exchange coupling magnetic field generated between the free magnetic sub-layers creates a ferrimagnetic state in which the magnetization direction can be reversed with high sensitivity to an external magnetic field (see page 14, lines 19 – 27). In addition, the coercive force of the free magnetic layer can be decreased to improve soft magnetic properties, and the magnetostriction can be easily controlled to near zero to achieve superior soft magnetic characteristics suitable for a thin film magnetic head (see page 19, lines 9 – 19). This feature is not disclosed in Carey et al.

Therefore, claim 1 is not anticipated by Carey et al. and Applicants submit that claim 1 rejection under 35 U.S.C. §102(e) is no longer valid and respectfully and earnestly solicit the Examiner's withdrawal of same. Applicants also submit that claims 2 – 3, 5, 9 – 10, and 18 – 19 are also allowable by virtue of their dependency from now allowable claim 1.

The Examiner has next rejected claims 1, 4 – 7, and 9 under 35 U.S.C §102 (e) as being anticipated by Mack et al. (U.S. Patent No. 6,462,919). Claim 4 has been cancelled, and thus its rejection is now moot. Although Mack et al do include a pinned layer 236 and a free magnetic layer 232 with a spacer layer 234 between them, they do not disclose or suggest that the free magnetic layer 232 be divided into two sub-layers separated by a non-magnetic intermediate layer so as to create 180 degrees opposing magnetizations between the two sub-layers. As such, claim 1 is not anticipated by Mack et al., and Applicants submit this second claim 1 rejection under 35 U.S.C. §102(e) is no longer valid and

respectfully and earnestly solicit the Examiner's withdrawal of same. Applicants further submit that claims 5 – 7 and 9 are also allowable by virtue of their dependency from now allowable claim 1.

**Rejection under 35 U.S.C. § 103**

The Examiner has rejected claim 8 under 35 U.S.C. 103(a) as being unpatentable over Mack et al. (U.S. Patent No. 6,462,919). Claim 8 is directed to the material alloy composition of the antiferromagnetic layer, wherein the alloy elements are selected so as to cause small changes in the exchange coupling magnetic field when subjected to a temperature change (see page 35, lines 9 to 14). Whereas in Mack et al., the antiferromagnetic material are chosen because of the corrosion preventing and the field reversal resisting characteristics. Thus, the use of the selected elements for the alloy in the antiferromagnetic layer of claim 8 would not have been obvious to one of ordinary skill in the art at the time the invention was made. Therefore, Applicants submit that claim 8 is not rendered unpatentable under 35 USC 103(a) over Mack et al. Claim 8 is dependent on allowable claim 1, and thus also allowable. Applicant therefore respectfully requests that the rejections of claim 8 under 35 U.S.C. § 103(a) be withdrawn.

**Conclusion**

Applicant submits that this application is now in condition for allowance, and favorable reconsideration of this application in view of the above amendments and remarks is respectfully requested. If, there are additional fees due, Applicant requests that this paper constitutes any necessary petition and authorizes the Commissioner to charge any underpayment, or credit any overpayment, to Deposit Account No. 23-1925.

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If the examiner finds that there are any outstanding issues which may be resolved by a telephone interview, the Examiner is invited to contact the undersigned at the below listed number

Respectfully submitted,  
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